SALTICIDAE (ARACHNIDA: ARANEAE) OF ORIENTAL, AUSTRALIAN AND PACIFIC REGIONS, XII. *MARENGO* PECKHAM & PECKHAM 1892 FROM PAPUA NEW GUINEA

MAREK ZABKA

Zabka, M.1999 06 30: Salticidae (Arachnida: Araneae) of Oriental, Australian and Pacific Regions, XII. *Marengo* Peckham & Peckham 1892 from Papua New Guinea. *Memoirs of the Queensland Museum* **43**(2): 893-905. Brisbane. ISSN 0079-8835.

Marengo is newly recorded from Papua New Guinea and five new species are described (*M. courti*, *M. platnicki*, *M. proszynskii*, *M. rafalskii* and *M. variratae*). Remarks on relationships and distribution are given. ❐ *Salticidae*, *Marengo*, *taxonomy*, *new species*, *Papua New Guinea*.

Marek Zabka, (email:zabka@wsrp.siedlce.pl), Zaklad Zoologii WSRP, 08-110 Siedlce, Poland; 24 September 1998.

New Guinea, being very diverse in topography, floristic formations and climate, and having a complicated geological history, is one of the richest salticid speciation centres in the tropics. The zoogeographical relationships between New Guinea, SE Asia, Australia and western Pacific archipelagos have long been discussed and resulted in different conclusions, depending on taxon level, its age, dispersal power or habitat requirements (e.g. Berland, 1934; Lehtinen, 1980, 1996; Zabka, 1991b, 1993; Prószynski, 1996).

Over 50 salticid genera from New Guinea, mostly from its Papuan part, have been recorded previously (Zabka, 1993), although *Marengo*, considered here, is new for this list. Established by Peckham & Peckham (1892) for *M. crassipes*, it includes 7 oriental species, known from Sri Lanka, Malaysia, Sumatra, Java, Borneo and Philippines, and 2 ethiopian species reported from Kenya, Tanzania, Congo, Zaire, South Africa and Angola, all of them revised by Wanless (1978). Some undescribed species have also been found in Bali, Lombok, Ambon, Sulawesi, Malaysia, Krakatoa and Thailand (Deeleman & Prószynski, unpubl.; Zabka, unpubl.).

MATERIAL AND METHODS

Specimens were collected by David J. Court, some with my own participation, in the Central Province of Papua New Guinea; all are deposited in the Queensland Museum, Australia.

Description format follows my earlier papers (e.g. Zabka, 1991a). Dissected epigynes were cleaned in lactic acid for 10-30 min. or digested in 10% KOH for 12-48 hr at room temperature, rinsed in distilled water, stained in ethanol solution of chlorazol black E under control and mounted in glycerine. Drawings were made using a grid system and Nikon microscopes.

Abbreviations: AEW = anterior eyes width, AL = abdomen length, CL = cephalothorax length, EFL = eye field length, PEW = posterior eyes width.

Marengo Peckham & Peckham, 1892

Marengo Peckham & Peckham, 1892: 66; Simon, 1901: 492; Bonnet, 1957: 2714; Wanless, 1978: 259; Brignoli, 1983: 627; Prószyński, 1971: 427, 1990: 203; Platnick, 1993: 776, 1997: 901.

TYPE SPECIES. *Marengo crassipes* Peckham & Peckham, 1892, by monotypy.

DIAGNOSIS (for Papua New Guinean species). *Marengo* differs from other ant-like salticid genera by the following characters: carapace flat, surface papillate; abdomen dark with transverse light pigmented band; first legs massive, tibiae swollen, with 2 rows of strong, dagger-like ventral spines and with dense fringe; embolus twisted, set retrolaterally at the top of tegulum, not around it; epigyne poorly sclerotised; copulatory openings indistinct, insemination ducts long.

DESCRIPTION. Ant-mimicking spiders. Body 2.5-5mm long. Carapace elongate and slender, rather flat, surface distinctly textured, papillate, fovea lacking. Eye field with 2 darker spots, occupies ≈40% of carapace length. Eyes in 3 rows, though anterior laterals are set above and behind medians. Posterior median eyes midway between anterior and posterior laterals. Abdomen elongate, with transverse light band, sometimes

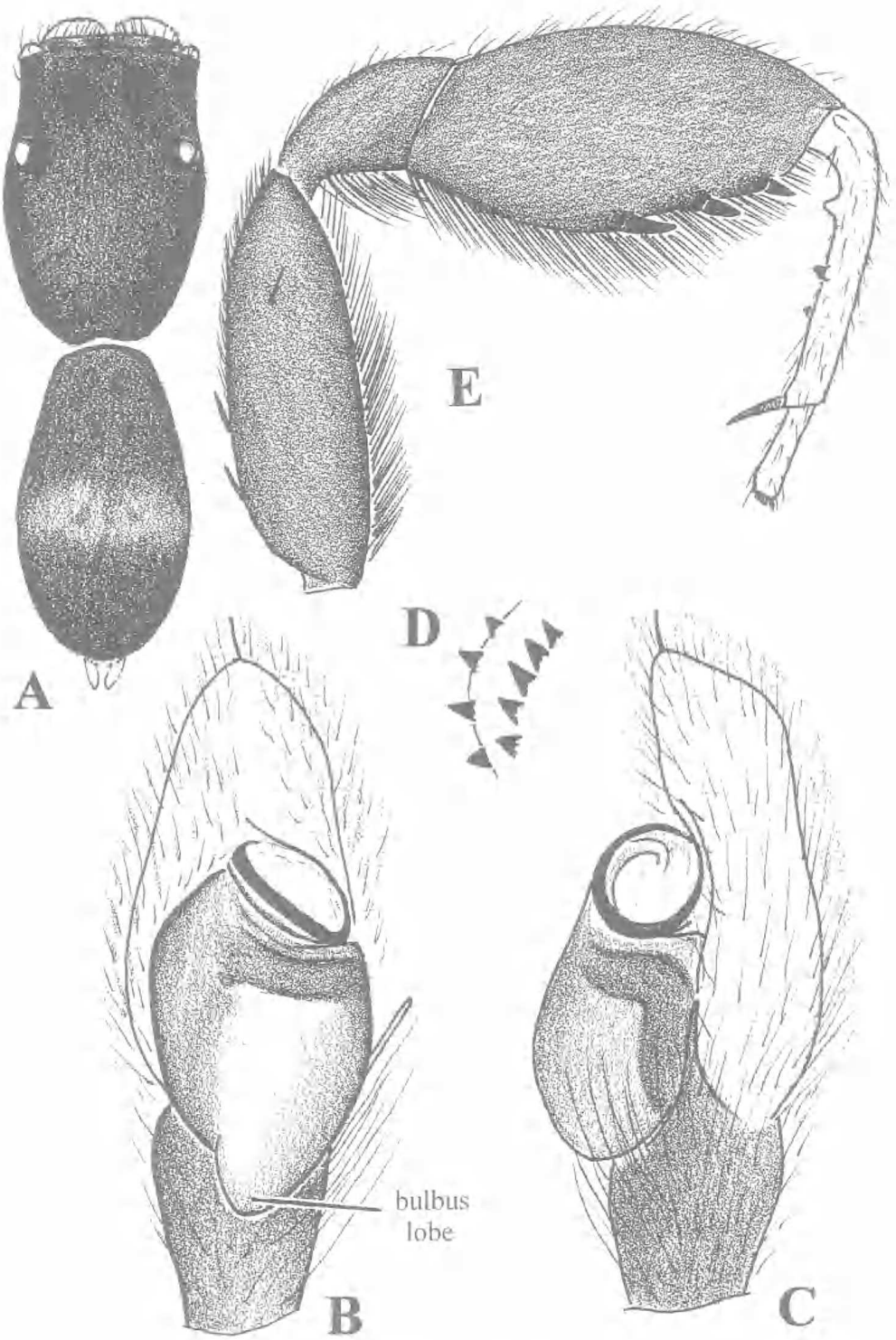

FIG. 1. *Marengo courti* sp. nov. holotype QMS42506, male. A, general appearance; B, C, palpal organ; D, cheliceral dentition; E, leg I.

covered with white hairs. Male abdomen shiny and with weakly marked scutum. Clypeus narrow, baekwards sloping. Chelieeral teeth showing pluridentate pattern. Promargin with 3-6 and retromargin with 5-6 separate teeth, showing individual variation. Maxillae, labium and sternum elongate, the latter seutiform. First legs long, mueh heavier than others, held in mantis-like manner, their tibiae swollen and with ventral fringe of dense stiff hairs. In males anterior legs longer but less massive, additionally their femora and patellae fringed. Ventral tibial spines massive, dagger-like, in prolateral and retrolateral rows, of 3 (in one case, 4), sometimes differing in number in the same speeimen. Metatarsal spines, especially proximal ones, redueed in size to small spurs. Metatarsi in males with proximal ventral knob. Other legs slender. Leg formula: I-IV-II-III. Male palpal organ very uniform in structure, showing little variation between speeies. Cymbium with apieal bristle, bulbus bag-like, sometimes with distinetive posterior lobe. Spermophore more or less translueent, meandering in its median part (if visible). Embolus long, coiled distally around membranous haematodoeha. Tibial apophysis slender. Epigyne weakly selerotised, in the form of 2 delieate depressions divided by median ridge. Copulatory openings indistinet, leading to wide insemination duets beeoming narrower and more selerotised before entering the thiek-walled, small spermatheeae. Insemination ducts with or without aeeessory glands.

AFFINITIES. Wanless (1978) and Platniek (1984) hypothesise relationships between *Marengo*, oriental *Mantisatta* and ameriean *Cheliferoides*. Indeed, the genera share similarities in genitalie pattern and leg morphology, the latter eharaeter an adaptation to hunting strategy rather than the result of relationships. *Cheliferoides* is known to be a crevice (bark) dweller with 1st legs heavier than others. *Mantisatta* lives in termite nests, hunting in a mantis-like manner (Cutler & Wanless, 1973). There is no information on crevice dwelling in *Marengo*. Some speeies are rainforest foliage inhabitants, others may be found in mangroves. It is likely that, as in some other saltieid genera (e.g. *Diolenius*), *Marengo* speeimens may mimie flies in reverse, with first legs held in the manner of flies' wings.

Three Australian genera, *Rhombonotus*, *Damoetas* and *Ligonipes*, resemble *Marengo* in habitus and leg structure (Davies & Zabka, 1989) but the genitalia show they are not closely related.

The presenee of 4 eye rows, the character mentioned by Wanless (1978), also is of limited value. Unlike the Spartaeinae, Lyssomaninae or *Athamas*, the posterior lateral eyes in *Marengo* do not form a distinctive 4th row and their position eannot be eonsidered as important phylogenetieally.

Marengo courti sp. nov.
(Figs 1A-E, 2A-E)

ETYMOLOGY. For David J. Court (Boroko, Papua New Guinea, now Singapore), arachnologist and the collector of specimens studied in this paper.

MATERIAL. HOLOTYPE: QMS42506, M, PNG, Central Province, Brown R., lowland rainforest, 16.vii.1988, D.J. Court, M. Zabka. ALLOTYPE: QMS42507, F, same data. PARATYPES: QMS42508, 3 F's, same data.

DIAGNOSIS. Bulbus with distinetive lobe, tibial apophysis shorter than in the next speeies. Epigyne with extended membranous pseudopocket (Fig. 2B, arrow). Insemination ducts without aeeessory glands.

Male (Fig. 1A). CL 1.87, EFL 0.80, AEW 1.19, PEW 1.27, AL 2.08. Carapaee brown, without numerous white hairs, eye field with 2 darker spots, eye surrounding blaek. Abdomen grey, transverse band slightly lighter. Spinnerets whitish. Clypeus, ehelieerae, maxillae and labium greyish-brown, the latter with lighter tips. Chelieeral promargin and retromargin with 4 and 5 teeth, respeetively (Fig. 1D). Sternum orange, venter grey. Leg I (Fig. 1E): femur, patella and tibia brown, laterally darker, ventrally with dense hairs, femur also with dorsal hairs. Legs II and III yellowish with brown sides of femur. Leg IV with darker sides of femur, patella, tibia and metatarsus. Palpal as illustrated in Fig. 1B,C.

Female (Fig. 2A). CL 1.71, EFL 0.72, AEW 1.14, PEW 1.14, AL 2.23. Clypeus brown. Chelieerae, maxillae, labium and sternum dirty-orange, the first with 3 promarginal and 6 retromarginal teeth (Fig. 2E). Leg I (Fig. 2D): femur and tibia with greyish-brown sides, the latter with ventral fringe, patella distally darker. Leg II: sides of femur with dark distal spots, patella, tibia and metatarsus greyish, especially retrolaterally. Leg III: retrolateral femur with grey distal spot, retrolateral patella, tibia and metatarsus with grey bands. Leg IV: femur sides grey, patella, tibia and metatarsus with retrolateral bands. Epigyne and

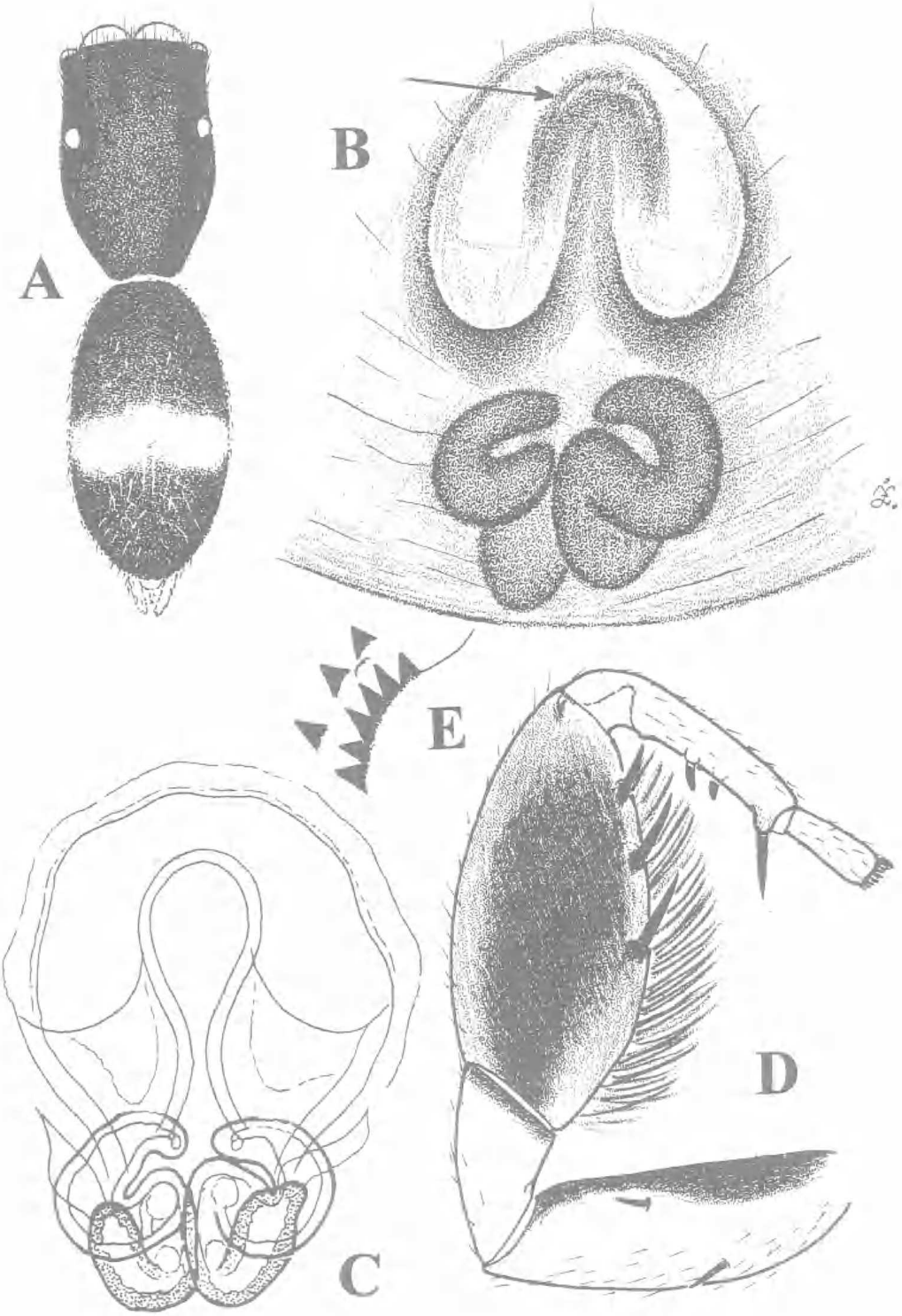

FIG. 2. *Marengo courti* sp. nov. allotype QMS42507, female. A, general appearance; B, C, epigyne and internal genitalia; D, leg I; E, cheliceral dentition.

internal genitalia as shown in Fig. 2B,C. Other characters as in male.

Marengo platnicki sp. nov.
(Figs 3A-E, 4A-E)

ETYMOLOGY. For Dr Norman I. Platnick (American Museum of Natural History, New York).

MATERIAL. HOLOTYPE: QMS42509, M, PNG, Central Province, SW side of main Astrolabe Ra., adjacent Sirinumu Dam, 15.VII.1986, D.J. Court. ALLOTYPE: QMS42510, F, same data.

DIAGNOSIS. Male carapace sides with white hairs. Palpal tibial apophysis laterally bent and longer than in the previous species, bulbus with posterior lobe. Female insemination ducts proximally very wide, with distinctive accessory glands.

Male (Fig. 3A). CL 1.92; EFL 0.78; AEW 1.19; PEW 1.19; AL 2.23. Carapace brown, sides with white hairs. Abdomen grey, glittering, laterally darker, with light transverse band. Clypeus and frontal chelicerae brown, the latter with 4 promarginal and 6 retromarginal teeth (Fig. 3E). Sternum orange, venter grey. Leg I (Fig. 3D): femur, patella and tibia brown with ventral fringe, dorsal parts of femur lighter with distal hairs, metatarsus and tarsus yellow. Other legs yellowish, II and III with darker sides, IV with darker posterior sides of femur, patella and tibia. Palpal organ as illustrated in Fig. 3B, C.

Female (Fig. 4A). CL 1.82; EFL 0.72; AEW 1.09; PEW 1.14; AL 2.21. Generally coloured as male, behind the eye field distinctive white hairs. Clypeus brown. Chelicerae dirty-light-brown, with 4 promarginal and 5 retromarginal teeth (Fig. 4D). Maxillae and labium dirty orange with lighter tips. Sternum dirty-yellow, venter beige. Leg I (Fig. 4E): lateral femur and tibia brown-grey, the latter with ventral fringe. Leg II: retrolateral femur, patella and tibia with dark band. Leg IV: distal femur laterally dark, retrolateral tibia and metatarsus with dark band. Epigyne and internal genitalia as illustrated in Fig. 4B,C.

Marengo proszynskii sp. nov.
(Fig. 5A-H)

ETYMOLOGY. For Prof. Jerzy Prószyński, prominent Polish specialist in taxonomy and biogeography of Salticidae.

MATERIAL. HOLOTYPE: QMS42511, M, PNG, Central Province, Brown R., lowland rainforest, 13.VII.1988, M. Zabka. ALLOTYPE: QMS42512, F, same data.

DIAGNOSIS. Male abdomen with 2 light spots rather than transverse band. Tibial apophysis bent aside, posterior bulbus' lobe not distinctive, embolus rather massive. Female internal genitalia multi-chambered, insemination ducts proximally widened, accessory glands not visible.

Male (Fig. 5A). CL 2.13, EFL 0.88, AEW 1.30, PEW 1.35, AL 2.34. White hairs on carapace rather scanty. Abdominal scutum poorly marked, sides with characteristic light spots and narrow stripes. Clypeus brown. Chelicerae orange brown, with 4 promarginal and 6 retromarginal teeth (Fig. 5D). Maxillae and labium dirty brown with lighter tips. Sternum pale-orange, venter grey. Leg I: femur dirty-brown with ventral and dorsal fringe, the first being less distinctive; patella and tibia lighter, especially their dorsal and ventral surfaces, both with ventral fringes; metatarsus and tarsus yellowish. Leg II: sides of femur dark-grey. Leg III: retrolateral side of femur grey. Leg IV: sides of femur, retrolateral tibia and metatarsus grey. Other parts of legs yellowish. Palpal organ as illustrated in Fig. 5B,C.

Female (Fig. 5E). CL 1.61, EFL 0.67, AEW 0.90, PEW 1.01, AL 2.02. Behind PLE distinctive white hairs. Clypeus brown. Chelicerae dirty-orange, with 3 promarginal and 5 retromarginal teeth (Fig. 5H). Maxillae greyish-orange, labium darker, sternum orange with darker margin. Venter centrally light-grey, towards sides darker. Leg I: sides of femur and tibia dark-grey, the rest yellowish, tibia with ventral fringe. Leg II: prolateral tibia and retrolateral femur, patella and tibia with grey band. Leg III: retrolateral femur with distal grey spot. Leg IV: distal sides of femur, retrolateral tibia and metatarsus grey. Other parts of podomeres II-IV yellowish. Epigyne and internal genitalia as shown in Fig. 5F,G. Other characters as in male.

Marengo rafalskii sp. nov.
(Fig. 6A-D)

ETYMOLOGY. For Prof. Jan Rafalski (1909-1995), prominent Polish arachnologist.

MATERIAL. HOLOTYPE: QMS42513, M, PNG, Central Province, Brown R., lowland rainforest, 29.VI.1988, D.J. Court. PARATYPE: QMS42514, M: same locality, from foliage, 13.VII.1988, M. Zabka.

DIAGNOSIS. Eye field covered with dense white hairs. Bulbus elongate, with posterior lobe.

Male (Fig. 6A). CL 1.97, EFL 0.83, AEW 1.11, PEW 1.19, AL 2.23. Carapace brown, distinctive

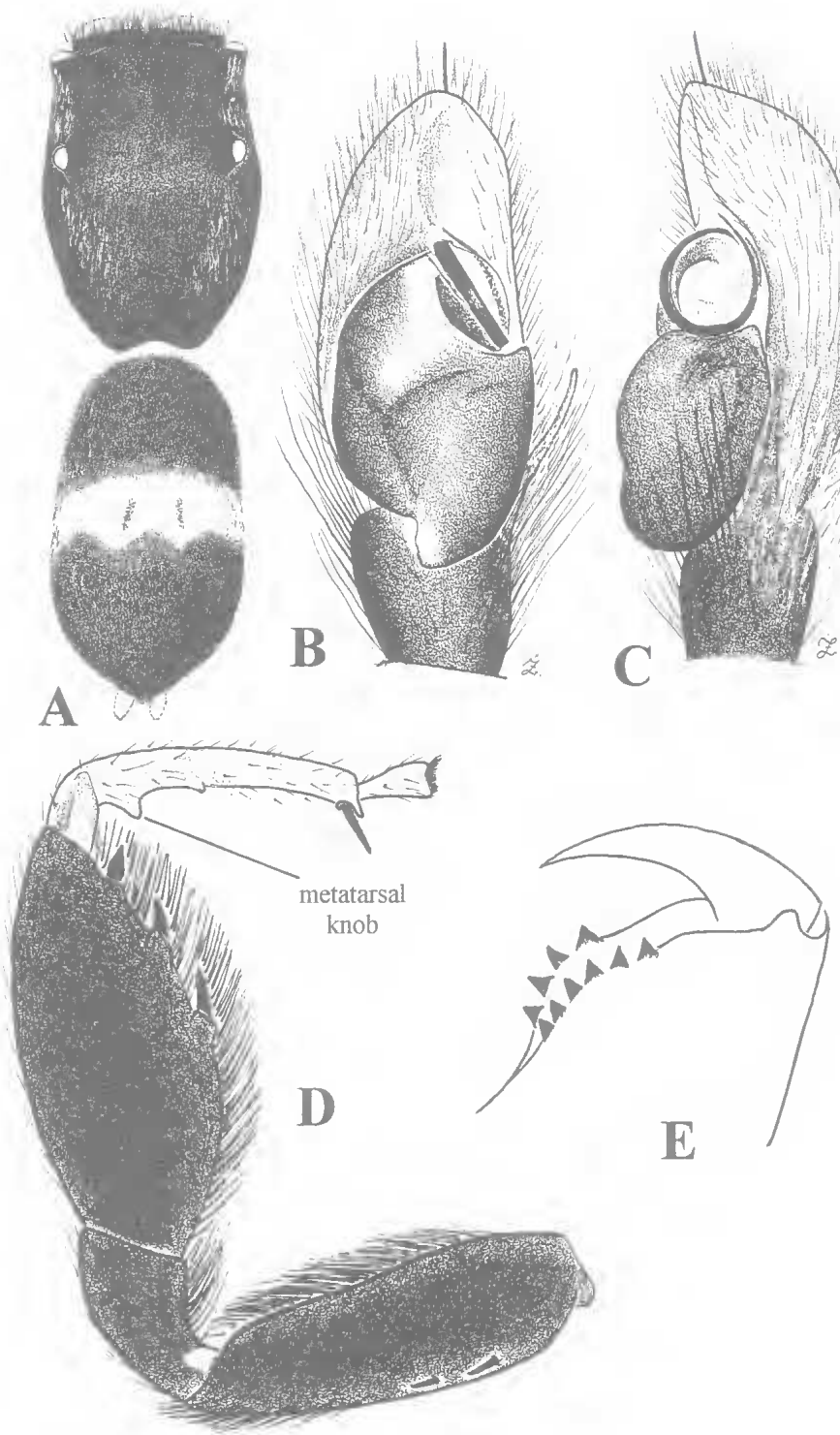

FIG. 3. *Marengo platnicki* sp. nov. holotype QMS42509, male . A, general appearance; B, C, palpal organ; D, leg I; E, cheliceral dentition.

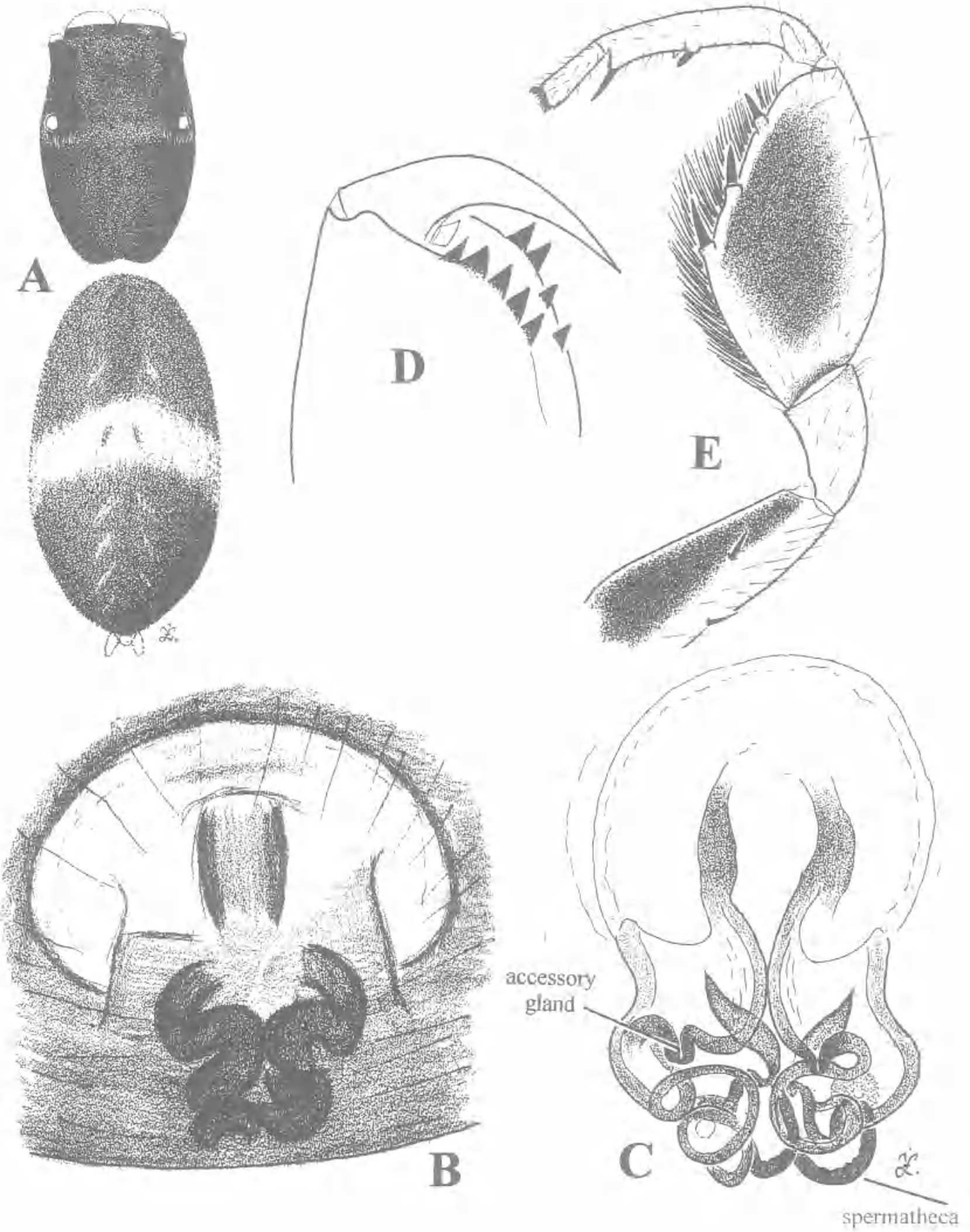

FIG. 4. *Marengo platnicki* sp. nov. allotype QMS42510, female. A, general appearance; B, C, epigyne and internal genitalia; D, cheliceral dentition; E, leg I.

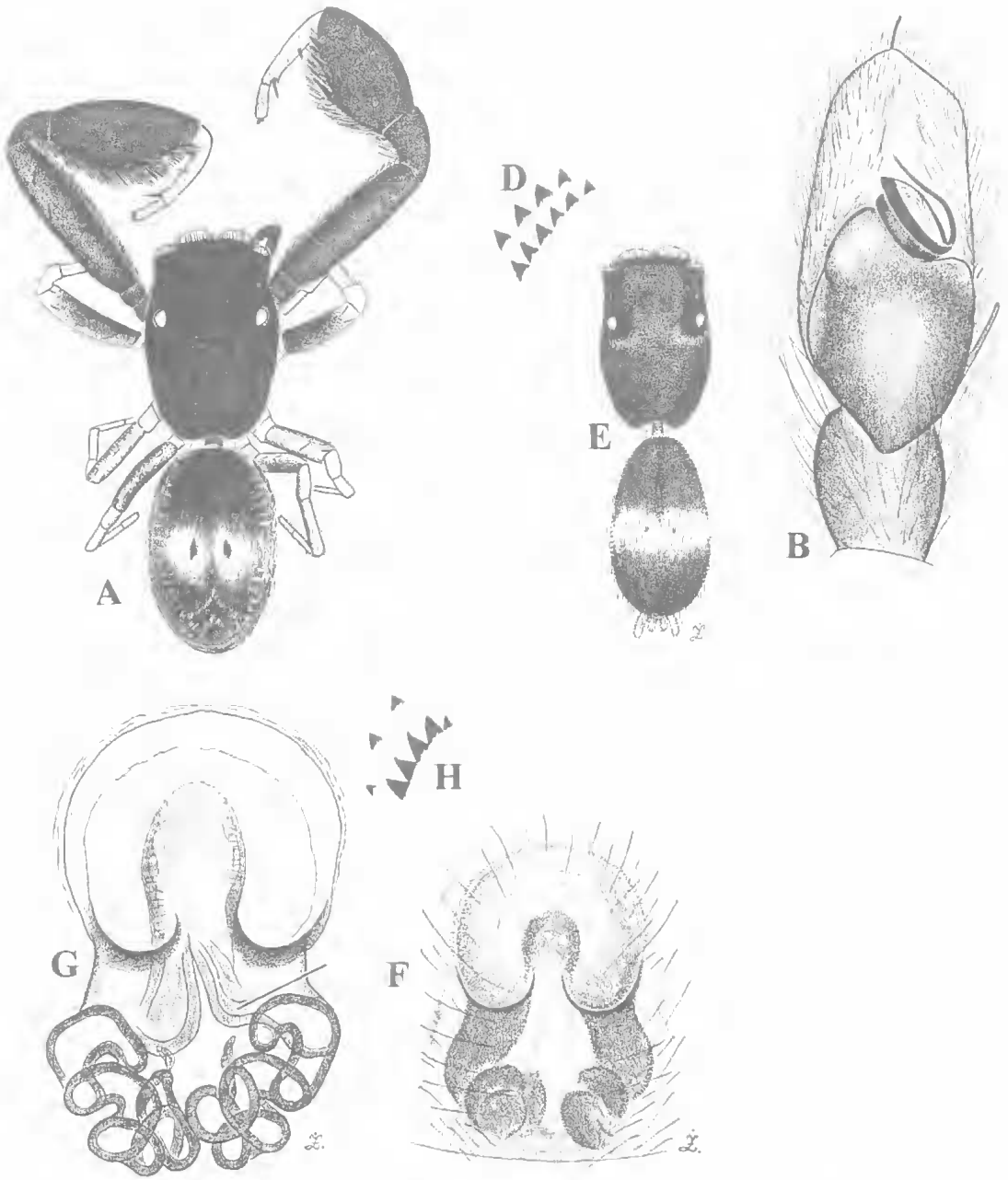

FIG. 5. *Marengo proszynskii* sp. nov. A-E, holotype QMS42511, male; A, general appearance; B, C, palpal organ; D, male cheliceral dentition; E-H, allotype, QMS42512, female; F, general appearance; F, G, epigyne and internal genitalia; H, cheliceral dentition.

light hairs extending behind PLE. Eye surroundings darker. Abdomen dark-grey with light transverse band and 2 darker apodemes. Spinnerets whitish. Clypeus brown, chelicerae lighter, with 5 prolateral and 6 retrolateral teeth (Fig. 6D). Pedipalps' proximal podomeres grey-brown, distal gradually lighter to whitish. Maxillae and labium dirty-orange, sternum lighter.

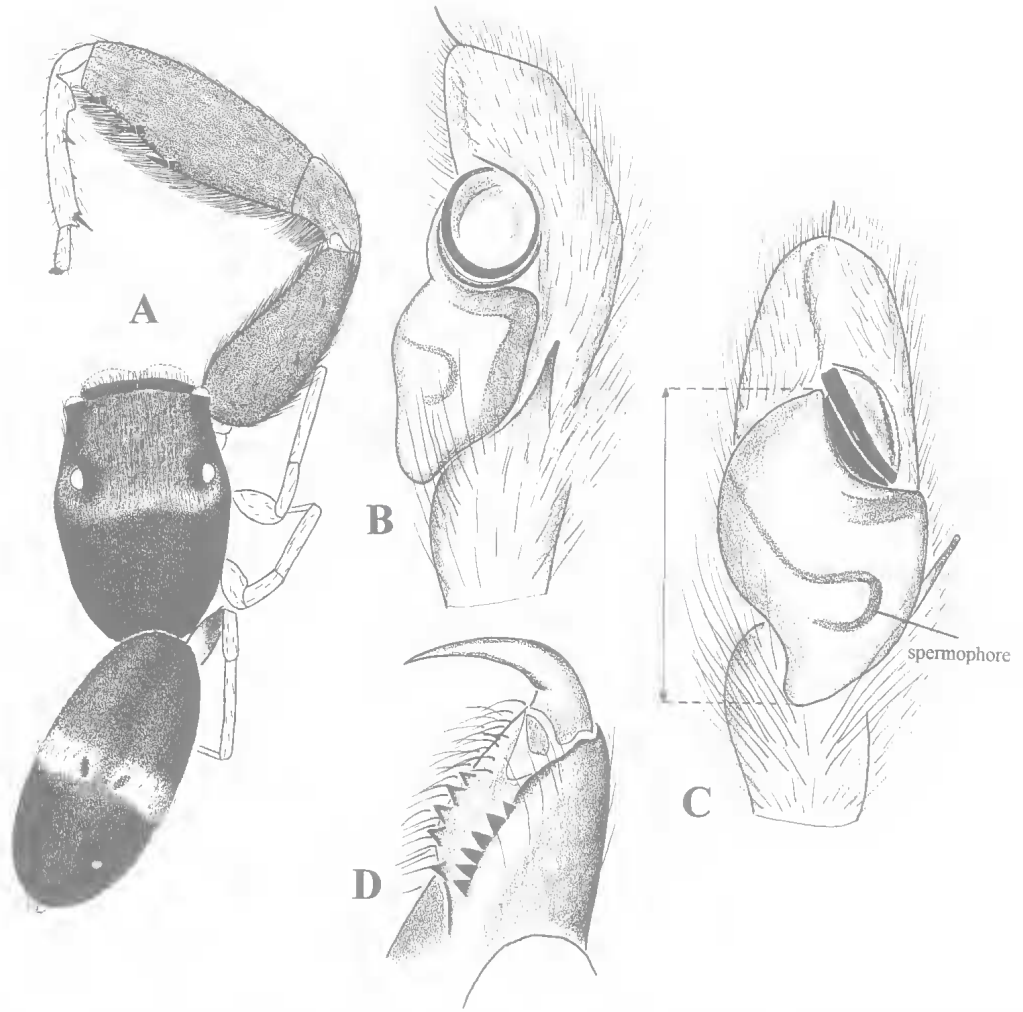

FIG. 6. *Marengo rafalskii* sp. nov. holotype, QMS42513, male. A, general appearance; B, C, palpal organ; D, cheliceral dentition.

Venter grey, centrally lighter. Leg I: massive and long, femur, patella and tibia greyish-brown, dorso-ventrally lighter, all with ventral fringes. Leg II: femur with lateral grey bands. Leg III: retrolateral side of femur grey. Leg IV: sides of femur grey, along retrolateral surface of patella, tibia and metatarsus grey band. Other podomeres of all legs white-yellow. Palpal organ as in Fig. 6B,C.

Marengo variratae sp. nov.
(Figs 7A-E, 8A-E, 9A-F)

ETYMOLOGY. For the type locality.

MATERIAL. HOLOTYPE: QMS42515, PNG, Central Province, Varirata National Park, 2.VI.1985, D.J. Court. ALLOTYPE: QMS42516, F, same data. PARATYPES: QMS42517-42518, 2 F's, same locality, 23.VI.1985, 24.VIII. 1985, D.J. Court, M, 2 juv., Central Province, Brown R., lowland rainforest, 29.VI.1988, D.J. Court.

DIAGNOSIS. Male carapace without numerous white hairs. Bulbus short, posterior lobe small. Female insemination ducts anteriorly narrow, with distinctive accessory glands.

Male (Fig. 7A). CL 2.23, EFL 0.93, AEW 1.45, PEW 1.50, AL 2.65. Carapace brown, eye surrounding black. Abdomen grey with light transverse band. Spinnerets whitish. Clypeus brown, chelicerae lighter with 4 prolateral and 5

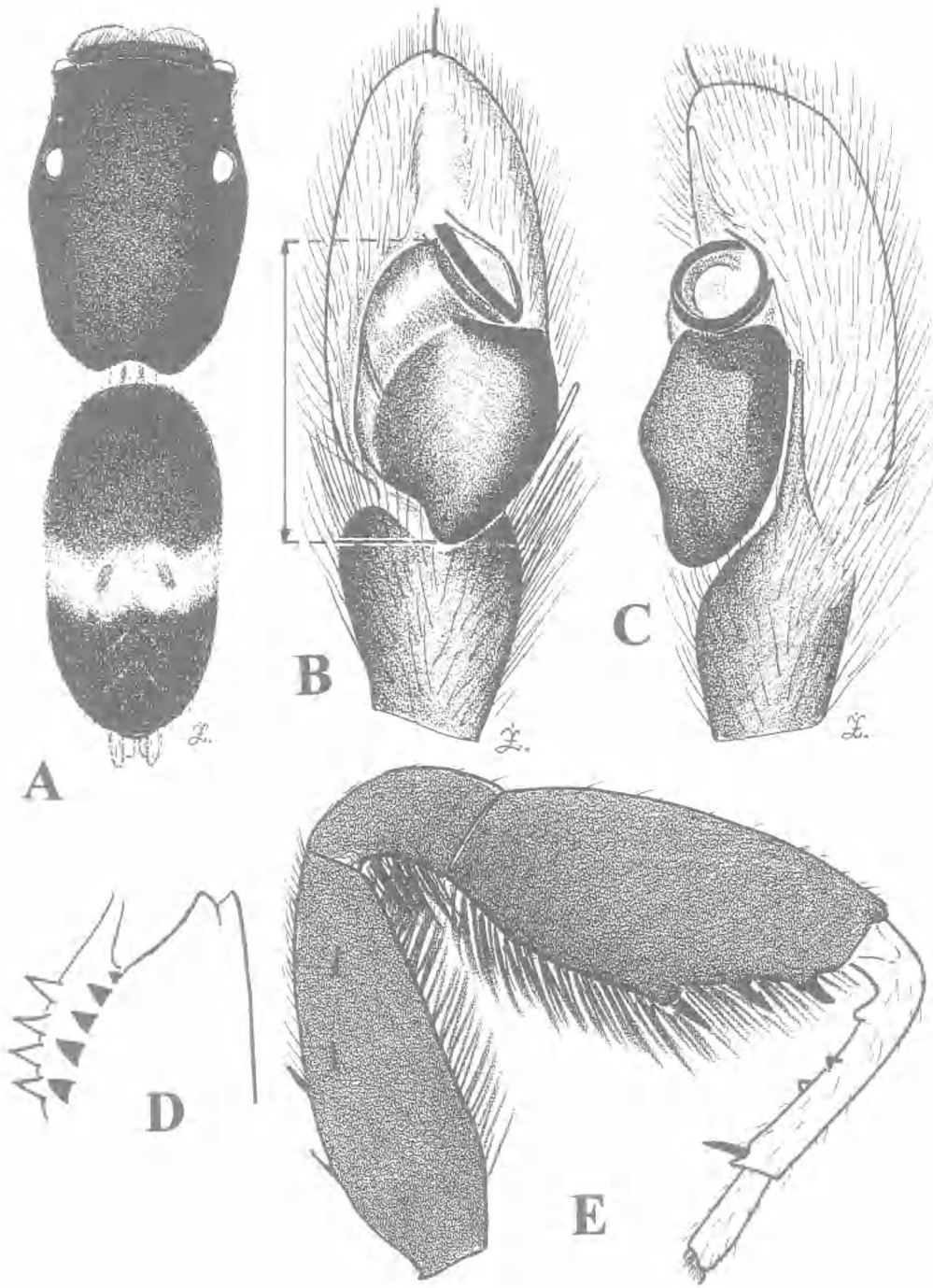

FIG. 7. *Marengo variratae* sp. nov. holotype, QMS42515, male. A, general appearance; B, C, palpal organ; D, cheliceral dentition; E, leg I.

retrolateral teeth. Maxillae and labium grey-brown with lighter tips. Sternum orange, venter grey. Leg I (Fig. 7E): femur, patella and tibia dirty-light-brown, lighter dorso-laterally, each

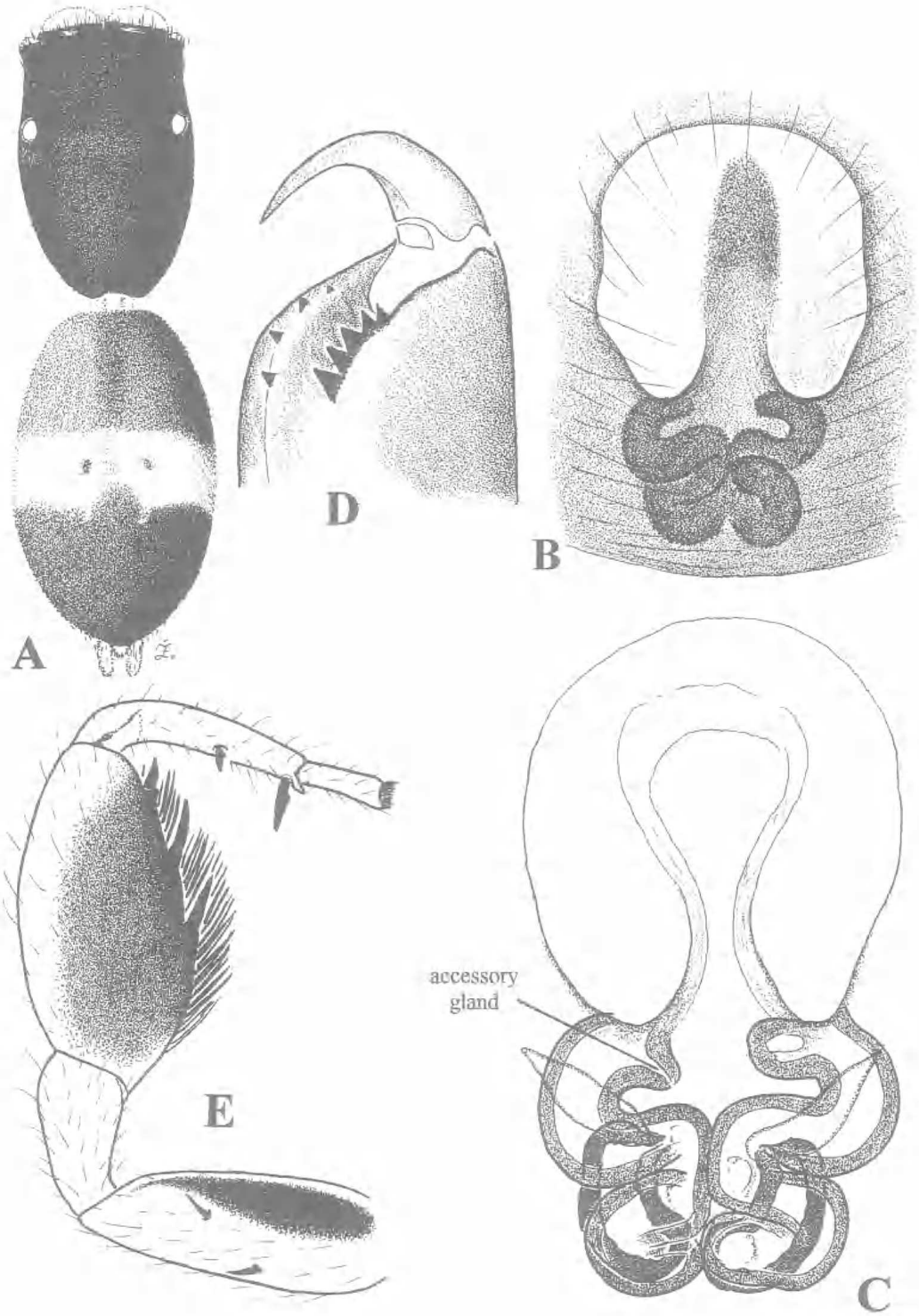

FIG. 8. *Marengo variratae* sp. nov. A-D, paratype, QMS42517, female. A, general appearance; B, C, epigyne and internal genitalia; D, cheliceral dentition. E, allotype, QMS42516, female, leg 1.

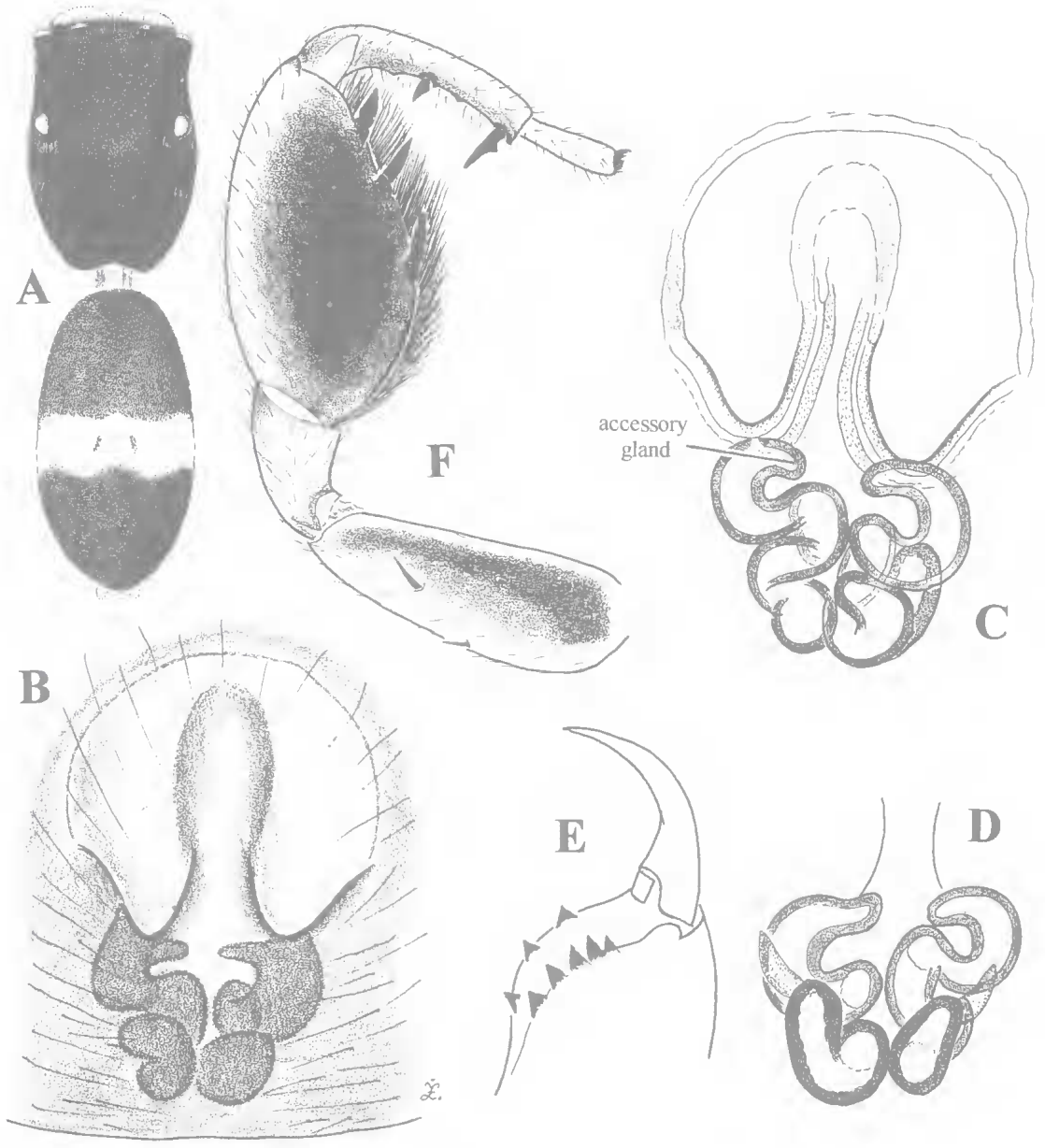

FIG. 9. *Marengo variratae* sp. nov. paratype, QMS42518, female. A, general appearance; B-D, epigyne and internal genitalia; E, cheliceral dentition; F, leg I.

with ventral fringe, femur also with dorsal hairs; metatarsus and tarsus yellow. Leg II-IV: femur laterally grey, the rest whitish-yellow. Palpal organ as illustrated in Fig. 7B,C.

Female (Figs 8A, 9A). CL 1.76, EFL 0.78, AEW 0.98, PEW 1.14, AL 2.54. Behind PLE scattered white hairs. Chelicerae yellow-orange, with 3-4 prolateral and 5 retrolateral teeth. Maxillae and labium light-orange with lighter tips. Venter with large light path being extension of the dorsal belt. Leg I (Figs 8E, 9F): lateral sides of femur and tibia grey-brown, other podomeres whitish; tibia

swollen with ventral scopula. Legs II and III whitish. Leg IV: sides of femur and retrolateral tibia with grey band. Other podomeres whitish. Epigyne as illustrated in Figs 8B,C & 9B-D. Other characters as in male.

ACKNOWLEDGEMENTS

The research was partly conducted under receipt of an Australian Museum Fellowship. M. Gray (Australian Museum, Sydney), V. Davies, R. Raven (Queensland Museum, Brisbane) and J. Waldock (Western Australian Museum, Perth) were most gracious and cooperative during my stay in their departments. D.J. Court (Boroko, now Singapore) is acknowledged for his generous hospitality and highly professional help while visiting Papua New Guinea. I am especially indebted to V.T. Davies (Queensland Museum, Brisbane) and M. Harvey (Western Australian Museum, Perth) for useful comments on the typescript and to C. Deeleman (Ossendrecht) for providing comparative specimens from Indonesia. The research was supported by Komitet Badan Naukowych (Projects 18/91/S and 512/93/W).

LITERATURE CITED

BERLAND, L. 1934. Les Araignées du Pacifique. Publications de la Société biogéographique 4: 155-180.

BONNET, P. 1957. Bibliographia Araneorum, vol. 3. (Imprimerie Douladoure: Toulouse).

BRIGNOLI, P.M. 1983. A Catalogue of the Araneae described between 1940 and 1981. (Manchester University Press: Manchester).

CUTLER, B. & WANLESS, F. R. 1973. A review of the genus *Mantisatta* (Araneae: Salticidae). Bulletin of the British Arachnological Society 2(9): 14-189.

DAVIES, V. T. & ZABKA, M. 1989. Illustrated keys to the genera of jumping spiders (Araneae: Salticidae) in Australia. Memoirs of the Queensland Museum 27(2): 189-266.

LEHTINEN, P.T. 1980. Arachnological zoogeography of the Indo-Pacific Region. Pp. 499-504. In Proceedings of the 8th International Congress of Arachnology, Vienna.

1996. Origin of the Polynesian Spiders. Revue suisse de Zoologie, vol. horse série: 383-397.

PECKHAM, G.W. & PECKHAM, E.G. 1892. Ant-like spiders of the family Attidae. Occasional Papers of the Natural History Society of Wisconsin 2(1): 1-83.

PLATNICK, N.I. 1984. On the pseudoscorpion-mimicking spider *Cheliferoides* (Araneae: Salticidae). Journal of the New York Entomological Society 92(2): 169-173.

1993. Advances in Spider Taxonomy 1988-1991. (New York Entomological Society: New York).

1997. Advances in Spider Taxonomy 1992-1995. (New York Entomological Society: New York).

PRÓSZYNSKI, J. 1971. Catalogue of Salticidae (Aranei) specimens kept in major collections of the world. Annales Zoologici 26: 367-519.

1990. Catalogue of Salticidae (Araneae). (Wyzsza Szkola Rolniczo-Pedagogiczna: Siedlce).

1996. Salticidae (Araneae) distribution over Indonesian and Pacific Islands. Revue suisse de Zoologie, vol. horse série: 531-536.

SIMON, E. 1901. Histoire Naturelle des Araignées, vol. 2. (Roret: Paris).

WANLESS, F.R. 1978. A revision of the spider genus *Marengo* (Araneae: Salticidae). Bulletin of the British Museum (Natural History), Zoology 33(4): 259-278.

ZABKA, M. 1991a. Salticidae (Arachnida: Araneae) of Oriental, Australian and Pacific Regions, V. Genus *Holoplatys* Simon, 1885. Records of the Australian Museum 43: 171-240.

1991b. Studium taksonomiczno-zoogeograficzne nad Salticidae (Arachnida: Araneae) Australii. Rozprawy naukowe WSRP Siedlce 32, 110 pp.

1993. Salticidae (Arachnida: Araneae) of New Guinea – a zoogeographic account. Bollettino dell' Accademia Gioenia di Scienze Naturali 26(345): 389-394.